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NOTES FROM MYCOLOGICAL LITERATURE. IV.

W. A. KELLERMAN.

MUSHROOMS, A. M. LONGENECKER, PLANT WORLD, 5:213-218, 2 pl., November 1902, is an interesting illustrated popular account of this group of eight or nine hundred species, of which "at least 650 have been proven edible."

IN SUPPLEMENTARY NOTES ON THE ERYSIPHACEÆ, ADDENDA, Bull. Torr. Bot. Club, 29:647-9, Nov. 1902, E. S. Salmon mentions two interesting species of Uncinula from Japan, and refers again to the reported occurrence of the American Sphærotheca mors-uvæ in Belgium (an error to be expunged), and in Russia; in respect to the latter, Mr. N. A. Mossolow, of St. Petersburg, says "there is no reason to believe that the parasite could have been introduced into Russia from America."

ONE HUNDRED NINETY EIGHT NEW SPECIES, AND THREE NEW GENERA OF FUNGI, were described (according to list in index) in the Journal of Mycology, volume 8, 1902.

IN A PAMPHLET OF FIFTY PAGES, by O. Penzig et P. A. Saccardo, entitled Diagnoses Fungorum Novorum in Insula Java collectorum, Series Tertia, 1902, extracted from MALPIGHIA 1901, there are described 164 new species and varieties; and 13 new genera are estableshed.

The following mycological titles are taken from the programs of the Daily Announcement of the Washington Meeting of the American Association for the Advancement of Science, and affiliated societies, Dec. 27, 1902 to Jan. 3, 1903. Problems in the Study of Plant Rusts (illustrated), J. C. Arthur; Uredinous Infection: Suggestions and Experiments, W. A. Kellerman; A Preliminary Synopsis of the North American Species of the Genus Mitrula, E. J. Durand; The Genera of Polyporaceæ, W. A. Murrill; Cultures of Uredineæ in 1902, J. C. Arthur; Some Undescribed Structures in Synchytrium decipiens, F. L. Stevens; The Nutrition of Certain Edible Basidiomycetes (illustrated.), B. M. Duggar; Types of the Linnean Genera of Fungi, F. S. Earle; Plum Blight Caused by the Pear Blight Organism, L. R. Jones and L. P. Sprague; Systematic Relations of the Genera of the Agaricaceæ, F. S. Earle; The Bacterial Flora of the Oyster's Intestine, C. A. Fuller; Studies upon the Cytohydrolytic Enzymes produced by Soft Rot Bacteria, L. R. Jones; A Mould Pathogenic to Lobsters, F. P. Gorham; A Fat-Splitting Torula Yeast Isolated from Canned Butter, L. A. Rogers; Nitrophilic Bacteria of Soils, F. D. Chester; Rhizobia in Economic Agriculture, Albert Schneider; Increasing the Virulence of the Tubercle Forming Bacteria in the Leguminosæ, George T. Moore; The

Relative Viability of B. coli and B. typhosus under Certain Conditions, Stephen De M. Gage; and Further Evidence of the Apperent Identity of B. coli and Certain Lactic Acid Bacilli, S. C. Prescott.

MYCOLOGICAL NOTES, NOS. 11 AND 12, were issued by C. G. Lloyd, December 1902, and generously distributed to mycologists. The notes are numbered 191-199 in No. 11, and 200-213 in No. 12. As usual these are neatly gotten up, very interesting and extensively illustrated. Full page, consecutively numbered separate plates now accompany the Myc. Notes. In No. 11 the notes are miscellaneous (two by Dr. Farlow), a new form of the Geaster saccatus is recognized; No. 12 is devoted to the Bovistæ — the species of Bovista and Mycenastrum; a new form of M. arium is recognized; the genus Catastoma will appear in the next issue.

UREDINEÆ NOVÆ, J. T. LINDROTH [of which 6 are North American], and eine arktisch-alpine Rhabdospora [an exhaustive study of R. cercosperma], are printed in Meddelanden från Stockholms Högskolas Botaniska Institut, Band IV, 1901.

PROFESSOR F. S. EARLE'S KEY to the North American species of Cortinarius is continued in Torreya, 2:180-3, Dec. 1902.

DR. ALEXANDER ZAHLBRUCKNER GIVES THE LATIN DIAGNOSES of one new genus (Hassea), 17 new species, and 2 new varieties of Lichens, under the title Diagnosen neuer und ungenügend beschriebener kalifornischer Flechten, in Beihefte zum Botanischen Centralblatt, 13:149-163. 1902.

IN THE PROCEEDINGS OF THE INDIANA ACADEMY OF SCIENCE 1901, (Published in 1902), Mycologic articles are as follows:— Notes on Apple Rusts (H. H. Whetzel); Notes on the Genus Stemonitis (H. H. Whetzel); The Germinative Power of the Conidia of Aspergillus oryzae (Mary F. Hiller); Spore Resistance of Loose Smut of Wheat to Formalin and Hot Water (William Stuart); Some Additions to the flora of Indiana — Plant Rusts (William Stuart); and A Collection of Myxomycetes (Fred Mutchler).

AN EXTENDED STUDY OF TWO FUNGOUS DISEASES OF THE WHITE CEDAR (Cupressus thyoides), namely Gymnosporangium biseptatum and G. ellisii, is given in the May No. of the Proceedings of the Academy of Natural Sciences of Philadelphia, pp. 461-504, plates XXII and XXIII, 1902. The belief is expressed that the fungi cause marked metabolic changes in the stem of the host, accompanied by the accumulation of resins and other substances, products of increased cell activity. A full and conveniently arranged tabulation of the characters, hosts and distribution is given of the several species of the genus Gymnosporangium.

THE INTERESTING AND VALUABLE REPORT OF THE STATE BOTANIST 1901, Charles H. Peck, has been published as New York State Museum Bulletin 54 (Botany 5) and includes pp. 931-984, plates K & L, and 77-81, November 1902. New species, 16 in number, and new varieties, 7 in number, are described. Another commendable feature is the full technical and popular descriptions of 11 species of Edible Fungi. These are illustrated in natural color on 2-page plates. Copies of this Report are offered for sale at 40 cents. Address Director N. Y. State Museum, Albany.

P. & H. SYDOW, IN FASCICULUS I, VOLUMEN I, MONOGRAPHIA UREDINEARUM (pp. 1-192) give the diagnoses of 302 species of Puccinia (298 on Compositæ and 4 on Calyceraceæ), of which 63 are described as new. Of the new species 13 belong to North America.

UNDER THE TITLE OF EINIGE PILZFUNDE aus der Umgegend von Berlin, in Verhandlungen des Botanischen Vereins der Provinz Brandenburg, 1901, 43:105-6, 1902, W. Ruhland after describing two new species of fungi, reports the occurrence of Peck's American Massaspora cicadina on a cicada collected in Bredower Forst the preceeding year.

PROFESSOR BESSEY NOTES THE DISEASE of potatoes that causes the fibro-vascular bundles to turn brown (Science N. S. 15:274, 14 Feb. 1902), and under his direction experiments were conducted by Mr. J. A. Warren, who showed the disease to be due to Stysanus stemonites (Pers.) Corda. This is the first record of this fungus in this country and the first report of its connection with the Brown Disease of Potatoes.

A SUMMARY of what is known in regard to the most serious diseases of the sugar beet is given by C. O. Townsend in Report No. 72, U. S. Dept. Agr., Progress of the Beet-Sugar Industry in the United States in 1901. The items are Damping Off, Curly top or blight, Leaf spot, Leaf scorch, Beet scab, Brown rot or Rhizoctonia rot, and Root gall.

IN A BOOK OF 323 PAGES recently issued (1902) by the Calumet Publishing Co., Pittsburg, Pa., entitled Powdered Vegetable Drugs, the author (Albert Schneider) briefly descusses [3 pages] Bacteria and Hyphal Fungi as causes modifying the characteristics of Vegetable Powders.

MINNIE REED IS THE AUTHOR OF A PAPER entitled Two New Ascomycetous Fungi parasitic on Marine Algæ, University of California Publications, Botany, 1:141-164, pls. 15-16, 20 Nov. 1902. The species described, studied and figured are Guignardia ulvæ and G. alaskana. But few cases have been reported of the association of fungi with marine algæ either in a symbiotic or a strictly parasitic relation. While by no positive statement maintained, it is nevertheless remarked that "perhaps instead of being a symbiotic relation, where each is benefitted, it may be a case of extreme relation, where the ascomycete is the aggressor and receives all the benefit at the expense of the alga."

STEREUM QUERCINUM, A NEW SPECIES, is according to M. C. Potter (Trans. Eng. Arboricult. Soc. 1901-2) the cause of Canker of Oak trees, common in the north of England.

A GOOD BRIEF OUTLINE OF THE INVESTIGATIONS (published in Bul. Min. Agr. France) ON A NEW BACTERIAL DISEASE OF THE POTATO by G. Delacroix, is given in the Experiment Station Record, 14:365, Dec. 1902. The disease is due to Bacillus solaninicola and it attacks the tomato as well. The characters of the disease are described. The conditions for infection seem to be a humid Spring which is late and cold followed suddenly by very hot, dry weather.

BEITRAG ZUR KENTNISS DER ROSTPILZE, Centralblatt f. Bakt. Par. u. Infektionskr. Zweite Abt. 9:796-804, 841-4, 6 u. 15 Dez. 1902, Ernst Jacky, includes inoculation experiments with Puccinia bardanæ; P. cirsii-lanceolati Schroet. und P. cirsii-eriophori Jacky; P. violæ (Schum.) DC.; P. helianthi Schw.; and P. prenanthis (Pers.) Lindr. Especially to be mentioned is this here first experimentally demonstrated fact that the Violet Rust is an aut-eu-puccinia; the author also shows that P. helianthi is an aut-eu-puccinia — the pycnidia, æcidia, uredo, and teleutospores produced (by sowings of teleutospores from Helianthus annuus) on H. annuus, H. cucumerifolius, and H. californicus, but the species not able to live on H. tuberosus, H. maximiliani, H. multiflorus, H. scaberrimus, and H. rigidus.

THE MYCOLOGICAL ARTICLES IN HEDWIGIA, Band XLI, Heft 6, 1902, are as follows: Fungi S. Paulenses II. a cl. Puttemans collecti, von P. Hennings; Battareopsis Artini n. gen., sowie andere von Professor Dr. G. Schweinfurth in Aegypten 1901-1902 gesammelte Pilze, von P. Hennings; Sceptromyces Opizi Corda (Botrytis sceptrum Corda) ist eine Conidienform von Aspergillus niger Rob., von C. Engelke; Neue Beobachtungen über die Vegetations-Formen des Mutterkornpilzes Claviceps purpurea Tulasne, von C. Engelke; Ueber den Artenbegriff von Uredo bistortarum DC. in Flore Française Vol. VI S. 76, von P. Magnus; and Ueber die richtige Benennung der Hyalospora Aspidiotus (Peck) P. Mag., von P. Magnus.

UEBER VENTURIA CRATAEGI N. SPEC., R. ADERHOLD, is an illustrated article, published in Berichte der Deutschen Botanischen Gesellschaft, 20:195-200, pl. 9, 23 Apr. 1902. As a synonym, is mentioned Venturia chlorospora (Ces.) Karst. p. parte. The conidial form is Fusicladium cratægi Adrh. n. sp.

The host is Cratægus oxycantha: Leaves exposed through the Winter for the perithecia; and fruit in Fall and Spring, perhaps also in Summer.

DESCRIPTIONS OF AMERICAN UREDINEÆ, IV, by J. C. Arthur and E. W. D. Holway, Bull. Lab. Nat. Hist. State Univ. Iowa, 5:311-334, pl. 1-9, Oct. 1902, apply to American plant-rusts inhabiting species of Gramineæ belonging to the sections of Agrostideæ and Chlorideæ, with their accompanying aecidia so far as known. Sixteen species are included, Puccinia muhlenbergiæ being new. Only one of the species has had its full cycle of development traced, namely Puccinia fraxinata (Lk.) Arthur of which Aecidium fraxini Schw. is the alternate form. The original diagnoses, also new and very full description and critical notes, as well as illustrations are given, as in previous numbers of this series. The article is based on the material in the authors' Uredineæ Exsiccatæ et Icones.

IN BEIBLATT ZUR HEDWIGIA, 41:(169), (177), (179), Sept. — Okt. 1902, (Heft 5.) we find the following mycological titles: Eine neue norddeutsche Phalloidee (Anthurus borealis Burt var. n. Klitzingii P. Henn.), von P. Hennings; Einige Uredineen aus Japan, von P. Dietel; Die Befruchtung von Albugo Lepigoni und einigen Peronosporeen, von W. Ruhland.

ARTICLES RELATING TO FUNGI in Hedwigia, Heft 4, 1902 (p. 164, & 167) are Einige neue deutsche Pezizaceen, von P. Hennings; Eeinige neue Cordiceps — Arten aus Surinam, von P. Hennings. In the Beiblatt to the same are, (p. 145) Bemerkungen zu Dietel's Ausführung über die Gattung Uropyxis, von P. Magnus; and (p. 146) Phlebia Kriegeriana P. Henn. n. sp., von P. Hennings.

COLLECTING AND PRESERVING FUNGI, UREDINEÆ, is briefly treated by E. W. D. Holway in Jour. Appl. Micr. & Lab. Meth. 5:2075-6. 1902. It is suggested that a portfolio with many thin sheets and but few dryers be used — though a botanical box is convenient in the wind or where very large quantity is to be taken. Leaves of grasses and sedges to be cut in 4 inch pieces; some ligules and inflorescences should be collected; search specially for the uredo stage also; collect æcidia when not too old, use but little pressure in drying them. Determine hosts accurately. Arrange the specimens in a large herbarium according to the host plant, putting different genera on different sheets. Have a set of mounted slides — Dr. Arthur's method, i. e. spores mounted dry, the cover glass fastened with a narrow strip of gummed paper.

FRANK LINCOLN STEVENS IN STUDIES IN THE FERTILIZATION OF PHYCOMYCETES, Bot. Gaz. 34:420-5, Dec. 1902, says that "the general bearing of the cytological evidence on the relationship of Sclerospora is to emphasize its affinity to the Peronosporaceæ rather than to the Albuginaceæ, and to indicate its specialized rather than primitive character. Sclerospora, as shown by the combined evidence of the double investment of its oospore, the character of its conidiophores, and its cytology, probably separated early from the main line of the Peronosporaceæ, at a time much later than the divergence of the Albuginaceæ from the Peronosporaceæ.

UREDINEÆ EXSICCATÆ ET ICONES, FASCICLE IV, J. C. ARTHUR AND E. W. D. HOLWAY, Dec. 1902, contains 49 packets, with a like number of photo-engraved drawings and heliotype reproductions from photographs, representing 15 species. It is needless to commend this admirable and to every student of Uredineæ indispensable set of specimens. The photographs (heliotype reproductions) have heretofore been unequalled. The signs the authors use here and elsewhere are, O for spermatia, I for æcidiospores, II for uredospores, III for teleutospores, and X for amphispores; the same printed in small type indicate few sori or the spores scattered among other spores.

A MONOGRAPH OF THE (7) NORTH AMERICAN SPECIES OF GANODERMA, by William Alphonso Murrill, is given in the Bull. Torr. Bot. Club, 29:599-608, October 1902. It is the "lucidus" group of Polyporus; the genus Ganoderma being established by Karsten in 1881, based upon the laccate character of pileus and stipe. The range was extended in 1887 by Patouillard to include all forms of Polyporaceæ with colored spores, adhering tubes and shining crusted pilei. Mr. Murrill describes as new five of the seven species included in the monograph.

CEPHALOTHECIUM ROSEUM HAS PROVED TO BE A TRUE PARASITE and the cause of an apple rot of great economic importance, according to H. J. Eustace, Science, N. S. 16:747-8, Nov. 7, 1902. In some sections thousands of barrels of apples have been ruined by it. Fusicladium dendriticum, unusually common, ruptures the epidermis and thus furnishes a means of entrance for the Cephalothecium.

THE MYCOLOGICAL ARTICLES in the 3^{e} Fascicule, Tome 18, Bulletin de la Société de France, 15 Août 1902, are Observations sur quelques-unes des principales espèces d'Amanites (Boudier); Sur deux Maladies du Vanillier — sur les formes primaires du Calospora vanillæ; Uromyces joffrini nov. sp. (Delacroix); Sur le mode de Développement du Champignon du "Noir des Bananes" — Gloeosporium musarum (Delacroix); Necessité de la presence d'une bacterie pour obtenir la culture de certains Myxomycetes (Pinoy).

AN INDEX BIBLIOGRAPHIQUE DES PRINCIPAUX ME′MOIRES de Mycologie in 1901 is given in the Bulletin de la Société Mycologique de France, 18:217-226. 1902.

SOME IMPORTANT MYCOLOGICAL ARTICLES published in 1902 in the Berichte der Deutschen Botanischen Gesellschaft are: Walter Busse, Ueber den Rost der Sorghum-Hirse in Deutsch-Ostafrika; P. Magnus, Ueber die in den knolligen Wurzelauswüchsen der Luzerne lebende Urophlyctis; P. Magnus, Ueber ein function der Paraphysen von Uredolagern, nebst einem Beitrage zur Kentniss der Gattung Coleosporium.

AN INSTRUCTIVE DISCUSSION, by F. C. Harrison and M. Cumming, of the Bacterial Flora of Freshly Draw Milk, is published in the Journal of Applied Microscopy and Laboratory Methods, 5:2029-2038, Nov. 1902. The work done to date is reviewed and full notes are given on the several species, one being hitherto undescribed.

THE THIRD ARTICLE IN THE SERIES of The Bacterial Flora of Freshly Drawn Milk, by F. C. Harrison and M. Cumming, is printed in Jour. Appl. Micr. & Lab. Meth. 6:2130—1, Jan. 1903. But little more than half a dozen species were obtained (3 cows). The authors refer to the fact of the germicidal properties of freshly drawn milk, allied to the similar bactericidal property of blood: it must also exist in milk in the udder and may inhibit or prevent the rapid multiplication of adventitious bacteria.

THE INSTRUCTIVE AND INTERESTING PRESIDENTIAL ADDRESS by J. C. Arthur before the Botanical Society of America at Washington, Jan. 1, 1903, is published in the Bulletin of the Torrey Botanical Club (30:1—18. Jan. 1903). The development of our knowledge of the Uredineæ is traced, the culture work done first by DeBary then Oersted noticed, the experiments in this country by Farlow, Thaxter and Halsted mentioned, the extensive and valuable labors of Eriksson of Stockholm and Klebahn of Hamburg emphasized and the numerous problems confronting the culturist traced with competent grasp. All mycologists will be profited in reading the address. Those who study or even collect Uredineæ ought to heed these statements: "No rust can be considered apart from its host; the parasitism is so closely wrapped up in the evolution of the species that to ignore it would be folly. Many collections of Uredineæ are rendered nearly worthless for study because the collector neglected to determine the host, or to include material in the collection by which the student could determine it."

THE EFFECT OF BLACK ROT ON TURNIPS is the title of Bulletin 29, Bureau of Plant Industry, U. S. Dept. Agr., author

Erwin F. Smith, issued Jan. 17, 1903. It is a series of photomicrographs, accompanied by an explanatory text. The 13 admirable plates are reproduced by the Heliotype Co., of Boston. It is claimed that the Bacterium (Pseudomonas campestris) is capable not only of destroying the middle lamellæ, but also of slowly dissolving the cell wall proper.

THE BACTERIA OF THE SOIL IN THEIR RELATION TO AGRICULTURE, by Frederick D. Chester, is set forth in extenso in Bulletin No. 98, Dept. Agr. Commonwealth of Pennsylvania, 1902. Such topics as soils, their value and origin; number and distribution of soil bacteria; chemical changes produced by bacteria in the soil; the elaboration of plant food; assimilation of atmospheric nitrogen; and related matters indicate a valuable and useful treatise, full and up to date, covering 88 pages, concluding with a bibliography of 105 titles.

DOTT. G. SCALIA HAS PUBLISHED IN AGRICULTORE CALABRO-SICULO, XXVII, Nr. 24, an article, Di Una Nuovo Malattia dell' Asclepias curassavica Spr., in which is proposed the new genus, Oidiopsis, "ab *Oospora* hyphis distinctis differt; *Oidio* omnino simillima sed endophyta."

DR. VON SCHRENK REPORTED TO THE ACADEMY OF SCIENCE OF ST. LOUIS January 5, 1903 [Science, N. S. 17:188, 30 Jan. 1903,] that Perley Spaulding had found two weeks earlier perfectly formed asci and ascospores of the Bitter-rot fungus (Glœosporium fructigenum Berk.) in the cankers induced on apple limbs by inoculation — thus demonstrating for the first time and beyond question, that the fungus produces its perfect fruit in the cankers. Since the asci are evenascent "it is not at all improbable that many of the supposed pycnidial spores found in both the natural and artificially produced cankers were really ascospores."

IN AN ARTICLE IN TORREYA (3:6—7, Jan. 1903,) entitled Vacation Observations.— III, Francis E. Lloyd mentions a case of large patches of the moss Polytrichum commune being killed by a fungus — probably a Mucor-like organism; also that the death of the capsules with some amount of distortion of Dicranum scoparium and Polytrichum ohioense was induced by a myxomycete. He found that Hypomyces lactifluorum, parasitic on Lactarius, is able to propel its spores 1½ inches or more.

THE MOBILITY OF RHIZOBIUM MUTABILE IS CONSIDERED by Albert Schneider in Contributions to the Biology of Rhizobia, Bot. Gaz. 35:56—8. Jan. 1903. Some of the conclusions are: the species is non-motile in most neutral media, especially in solid neutral media; it is decidedly motile in acid media, whether these media are liquid or solid; motile Rhizobia are smaller, and more uniform in size and form.

ASPERGILLUS NIGER AND PENICILLUM GLAUCUM were used by Arthur L. Dean in Experimental Studies on Inulase, Bot. Gaz. 35:24—35. Jan. 1903. The inulase of these fungi does not pass into the culture medium; it is therefore an endo-enzyme. It acts most vigorously in a medium containing 0.0001 normal acid (H_2SO_4). Alkalies hinder the activity of inulase.

CLEAR AND USEFUL SUGGESTIONS ON CULTURE METHODS WITH UREDINEÆ are given by Mark Alfred Carleton in Jour. Appl. Micr. & Lab. Meth. 6:2109—2114, Jan. 1903. These are arranged under the following topics: Methods of Germination; Selection of Materials; Methods of Inoculation; and Suggestive Studies.

ERRATA.

Some unfortunate errors are found in Prof. Morgan's article in the last No. (vol. 8, 1902) and changes should be made as follows, suggested by the author: Paragraph No. 3 (p. 179) change 1834 to 1885; No. 55 (p. 184) erase the last line "Peziza æruginascens, etc."; No. 59 (p. 185) erase the second line, substitute Lachnea aurelia Gillet, Disc. Fr. 1879; No. 60, erase the second line, Substitute Belonidium auratum Saccardo, Mich. I. 1877; No. 85 (p. 188) in fourth line change "algida" to albida; No. 88, "Martins" should be Martius and "stenostorna" should be stenostoma; No. 94 (p. 189) in second line change "2-3" to $\frac{2}{3}$. In seventh line change "8-8" to 8-9.

On page 15 (same vol.) "Puccininia" should be Puccinia; p. 76, the line beginning "Lycopodium" should be stricken out; p. 97, "Tolysporium" should be changed to Tolyposporium, and "Tracy Syd." etc., changed to Tracya Syd. etc.; p. 117, "Polyporis" should be changed to Polyporus; p. 125, "E. V. Wilcox" should be E. N. Wilcox; p. 231, "Granularia rudii" should be Granularia rudis; and p. 239, change *"Corprineae"* and *"Corprinus"* to *Coprineae,* etc.